

**CASTILLEJA SECTION EUCHROMA (SCROPHULARIACEAE) IN MEXICO:
NEW SPECIES AND COMMENTS ON OTHER TAXA**

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ABSTRACT

Two new species of *Castilleja* sect. *Euchroma* are described from Tamaulipas, México: *C. porphyrosceptron* from the Sierra de Guatemala in the Gómez Farías area and *C. papilionacea* from the Sierra de San Carlos. The identity of *C. cryptandra* is clarified, and range extensions are noted for several other species of the section.

KEY WORDS: *Castilleja*, Scrophulariaceae, México

The Mexican collections of *Castilleja* housed at MICH provide a rich source of information regarding the genus. Represented among nearly 700 such collections there are two previously undescribed species. Both are members of sect. *Euchroma* (Nutt.) Benth. (sensu Eastwood 1909).

***Castilleja porphyrosceptron* Nesom, sp. nov.** TYPE: MEXICO. Tamaulipas: [Sierra de Guatemala,] La Lagunita valley, 4 km by road NW of Aserradero La Gloria, ca. 10-12 km WNW of Gómez Farías, montane, mesic pine-oak-madroño forest, with *Myrica* and other shrubs, wet grassy area in the forest, 1900 m, 4 Jun 1953, *P.S. Martin H31* (MICH).

A speciebus affinibus *Castilleja* sect. *Euchroma* dignoscenda plantis tenuibus ut videtur rhizomatibus tenuibus efferentibus, caulibus ac foliis glabris, foliis lineari-lanceolatis, calyces aequaliter divisus lobis ad apices rotundatis, et bracteis floralibus superis ac apicibus calycum purpuratis.

Short lived perennials, apparently arising from very slender rhizomes, the stems and leaves glabrous. Stems erect, 17-28 cm tall, ca. 1 mm wide at the base. Leaves linear-lanceolate with an acuminate apex, entire, clasping,

closely ascending-appressed, overlapping on the stem, 1-3 cm long, 1-2 mm wide, gradually reduced in size upwards, the uppermost similar to the lower floral bracts. Inflorescence 2-4 cm long, with ca. 4-7 sessile flowers; lower floral bracts green, the upper with purple tips; upper bracts and sepals crinkly villous along veins and margins. Calyx 17-21 mm long, narrowed near the base, widening distally, the upper 2/3 purple to red-purple and short stipitate glandular near the apex, whitish near the base, primary clefts 6-8 mm deep, the lobes rounded to very slightly emarginate. Corollas 19-24 mm long, the galea 8-9 mm long, ca. 1/3 as long as the corolla, exerted 3-5 mm from the calyx, the galea with red margins, the dorsal surface viscid-villous with short hairs, lower lip of 3 thick, green, lanceolate teeth ca. 1 mm long; stigmas narrowly clavate. Capsules ovate, 7-8 mm long. Known only from the type collection.

Castilleja porphyroscptron is distinctive in the following combination of features: very slender plants apparently arising from thin rhizomes, glabrous stems and leaves, linear-lanceolate leaves, evenly divided calyces with rounded lobe tips, and the apices of the calyces and upper floral bracts purple. In its calyx morphology (constricted near the base, widening distally), the new species clearly belongs to the group of species including and related to *C. scorzoneraefolia* Kunth. In its very slender stems and rhizomatous habit, *C. porphyroscptron* is at least superficially similar to *C. chloroscptron* Nesom (from Durango and Chihuahua); the latter, however, has minutely hispidulous stems and red tipped, triangular calyx lobes, features that appear to ally it more closely with other species of the western sierra. In view of its purple bracts and calyces, as well as its geographical position, the new species may be closely related to *C. nitricola* Eastwood. The latter is a rare species endemic to saline plains of northeastern San Luis Potosí, and it is the only other species of *Castilleja* in México with consistently purple colored calyces and floral bracts. *Castilleja nitricola*, however, is more like *C. scorzoneraefolia* in habit (more robust, without rhizomes, with lanceolate leaves).

Only two other species of *Castilleja* are known from the Sierra de Guatemala area of Tamaulipas: *C. arvensis* Cham. & Schlecht. and *C. integrifolia* L. f. (Johnston *et al.* 1989; the latter species mistakenly reported as *C. tenuiflora* Benth.).

***Castilleja papilionacea* Nesom, sp. nov.** TYPE: MEXICO. Tamaulipas: Sierra de San Carlos, vicinity of San José, La Vegonia, 3400 ft, 6 Jul 1930, H.H. Bartlett 10138 (HOLOTYPE: MICH!).

Castillejae scorzoneraefoliae Kunth similis sed differt foliis oblanceolatis, bracteis floralibus ac sepalis flavis, et bracteis floralibus late oblanceolatis.

Perennial herbs from slender but woody roots. Stems 22-35 cm tall, arising mostly singly from the base, invested with a mixture of long, stiff, vitreous hairs 1-2 mm long and shorter, soft hairs, many of the latter stipitate-glandular. Leaves oblanceolate, 2-6 cm long, 4-7 mm wide, 3 veined, subclasping, hairy above and beneath. Inflorescence 3-6(-15) cm long; floral bracts broadly oblanceolate, mostly 20-32 mm long, (11-)14-20 mm wide, yellow distally, green near the base. Calyces 17-24 mm long, narrowed near the base, widening distally, the primary cleft 9-10 mm deep, with lobes 7-9 mm wide, rounded or slightly emarginate apically. Corollas 23-27 mm long, the galea 7-9 mm long, ca. 1/3 the corolla length, exerted 4-6 mm from the calyx, margins yellow, the dorsal surface viscid villous with short hairs, the lower lip of 3 thick, green teeth ca. 1 mm long. Fruits elliptic-lanceolate, 9-11 mm long.

Additional collections examined: MEXICO. Tamaulipas, Sierra de San Carlos, vicinity of San José: La Vegonia, 3200 ft, 5 Jul 1930, *Bartlett 10078* (MICH); Cerro de los Armadillos, 9 Jul 1930, *Bartlett 10187* (MICH); near crest of ridge above Mesa de Tierra, 12 Jul 1930, *Bartlett 10273* (MICH).

In a summary of the flora and vegetation of the Sierra de San Carlos, Briones (1991) listed four collections of *Castilleja* but did not identify them. In my own studies of the genus, I have seen no species other than *C. papilionacea* from that area.

Castilleja papilionacea is immediately distinguished by its oblanceolate leaves, yellow floral bracts and calyces, and broadly obovate floral bracts. It is closely related to the widespread *C. scorzoneraefolia* Kunth, but the new species appears to be isolated on the northeasternmost periphery of the range of the former (Nesom 1992a, Map 1). Oblanceolate leaves rarely occur in *C. scorzoneraefolia* (with lanceolate leaves) but are characteristic of two other of its close relatives, *C. hirsuta* Benth. and *C. falcata* Eastwood. Floral bracts are mostly oblanceolate in *C. scorzoneraefolia* (mostly 5-9 mm wide, rarely to 13 mm), much narrower than in *C. papilionacea*. Yellow bracted variants are common in other primarily red bracted *Castilleja* species of México (e.g., *C. tenuiflora* Benth. and *C. integra* A. Gray), but they are rare in *C. scorzoneraefolia*. Among more than 650 collections (GH, MICH, NY, SMU, TEX, WIS) of the latter species, I have seen only one yellow bracted collection: Oaxaca, vicinity of Cerro Zempoaltepetl, *Hallberg 741* (MICH). In its set of distinctive features and its isolated locality, without intergrading forms, *C. papilionacea* is justifiably regarded as a separate species.

The identity of *Castilleja cryptandra* Eastwood

In an earlier paper (Nesom 1992a), I placed *Castilleja cryptandra* Eastwood as a synonym of *C. nervata* Eastwood. After examining MICH collections from Nevado de Colima, however, of a species strongly differentiated from *C.*

nervata, it appears that the endemic from Nevado de Colima can justifiably be represented by the name *C. cryptandra*. The plants of the type collection of *C. cryptandra* are similar to *C. nervata* in their included corollas (hence the epithet) and green calyces, and they almost certainly are of hybrid origin between *C. nervata* and the endemic of Nevado de Colima. Nevertheless, the plants of the type produce enough of the distinctive features of the endemic to obviate the necessity of formalizing another name for it. The two species are contrasted in the following couplet.

1. Plants mostly with 1-3 erect stems arising from the base; leaves not at all clasping; upper floral bracts red tipped, the lower red tipped or all green; calyces all green, the lobes rounded or barely emarginate; corollas included within the calyces. *C. nervata*
1. Plants caespitose, with numerous (up to 15) ascending stems arising from the base; leaves strongly clasping to subclasping; upper floral bracts red from near base to apex, the lower bracts red tipped; calyces crimson-red from near the base to apex, the lobes with secondary clefts 2-4 mm deep; corollas conspicuously exerted (3-6 mm) from the calyces. *C. cryptandra*

The following collections of *Castilleja cryptandra* have been examined from MICH: MEXICO. Jalisco: Nevado de Colima: N slope, La Joya, 10900 ft, 20 Nov 1968, *Boutin & Brandt 2308*; 18.9 mi by road NW of intersection of road to Nevado and road between Atenquique and Tonila, pine-oak-fir zone, pedregal and ash with shrubs and perennials growing among rocks, 2890 m, 12 Aug 1972, *Denton 2062*; NE slopes, above Canoa de Leoncito, steep mountainsides in alder-zacaton zone, locally abundant on rocks along waterline, 3100-3300 m, 13 Sep 1952, *McVaugh 12895*; upper slopes of the peak, near timberline and above, abundant on steep rocks, 3300-4340 m, 13 Sep 1952, *McVaugh 12910*.

Comments on other taxa of sect. *Euchroma*

The collections at MICH have added additional information regarding recently described species of *Castilleja*. The two collections of *C. chlorosceptron* in the initial description (Nesom 1992b) were noted as being widely separated within the state of Durango. A third collection extends its range northward into Chihuahua: MEXICO. Chihuahua: Cerro Mohinora, 11 Aug 1960, *Straw & Forman 1980* (MICH). An isotype and duplicate of the single paratype of *C. zempoaltepetlensis* Nesom (Nesom 1992c) also are housed at MICH. The range of *C. scorzoneraefolia* is now known to extend as far northwest as southern Chihuahua: MEXICO. Chihuahua: Cerro Mohinora, 11 Aug 1960, *Straw & Forman 1971* (MICH).

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